

## CLAIMS

1. A reproducing apparatus for reproducing content data recorded on a disc shaped recording medium, the reproducing apparatus comprising:

5 reading means for reading from the recording medium a video stream, a first flag described for each reproduction unit of the video stream, the number of angles that the reproduction unit contains, and position information that represents the positions of the angles on the video stream, the first flag  
10 representing whether or not the reproduction unit can be reproduced with a plurality of angles; and

reproducing means for controlling the reading means so that the video stream that composes the angles  
15 is read in accordance with the position information.

2. The reproducing apparatus as set forth in claim 1,

wherein the reproducing means is configured to change the reproduction position of the video stream  
20 in accordance with the position information so as to allow the current angle to be switched when the flag represents that the reproduction unit can be reproduced with the plurality of angles.

3. The reproducing apparatus as set forth in claim 2,  
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wherein the video stream has been encoded in the unit of one or a plurality of frames and recorded

on the recording medium,

wherein the reading means is configured to read a second flag described in the encode unit from the recording medium, the second flag representing whether or not the current angle can be switched at the beginning of the encode unit, and

wherein the reproducing means is configured to change the reproduction position of the video stream at a position in accordance with the second flag.

4. The reproducing apparatus as set forth in claim 3,

wherein the second flag is described in a predetermined region on the rear end side of each of the angles.

5. The reproducing apparatus as set forth in claim 4,

wherein the reproducing means is configured to not change the reproduction position when a command that causes the reproduction position to be changed in the predetermined region is issued.

6. The reproducing apparatus as set forth in claim 4,

wherein the reproducing means is configured to return to a position immediately preceding the predetermined region of a switched angle and reproduce the angle when a command that causes the reproduction position to be changed in the predetermined region is

issued.

7. The reproducing apparatus as set forth in claim 4,

wherein the size of the predetermined region is based on the maximum access time of the reading means from a first region to a second region on the recording medium and the difference between the read speed and the reproduction speed for the video stream of the reading means from the reproducing means.

8. A reproducing method for reproducing content data recorded on a disc shaped recording medium, the reproducing method comprising the steps of:

reading from the recording medium a video stream, a first flag described for each reproduction unit of the video stream, the number of angles that the reproduction unit contains, and position information that represents the positions of the angles on the video stream, the first flag representing whether or not the reproduction unit can be reproduced with a plurality of angles; and

controlling the reading step so that the video stream that composes the angles is read in accordance with the position information.

9. A reproducing program that causes a computer device to execute a reproducing method for reproducing content data recorded on a disc shaped recording medium, the reproducing method comprising the steps of:

reading from the recording medium a video stream, a first flag described for each reproduction unit of the video stream, the number of angles that the reproduction unit contains, and position information that represents the positions of the angles on the video stream, the first flag representing whether or not the reproduction unit can be reproduced with a plurality of angles; and

controlling the reading step so that the video stream that composes the angles is read in accordance with the position information.

10. A disc shaped recording medium on which a reproducing program that can be read by a computer device has been recorded, the reproducing program causing the computer device to execute a reproducing method for reproducing content data recorded on the recording medium, the reproducing method comprising the steps of:

reading from the recording medium a video stream, a first flag described for each reproduction unit of the video stream, the number of angles that the reproduction unit contains, and position information that represents the positions of the angles on the video stream, the first flag representing whether or not the reproduction unit can be reproduced with a plurality of angles; and

controlling the reading step so that the

video stream that composes the angles is read in accordance with the position information.

11. A disc shaped recording medium on which content data has been recorded,

5 wherein a video stream, a first flag described for each reproduction unit of the video stream, the number of angles that the reproduction unit contains, and position information that represents the positions of the angles on the video stream have been  
10 recorded on the recording medium, the first flag representing whether or not the reproduction unit can be reproduced with a plurality of angles, and

wherein the video stream that composes the angles is read in accordance with the position  
15 information.

12. The recording medium as set forth in claim 11,

wherein the reproduction position of the video stream can be changed in accordance with the position information when the flag represents that the  
20 reproduction unit can be reproduced with the plurality of angles.

13. The recording medium as set forth in claim 12,

wherein the video stream has been encoded in the unit of one or a plurality of frames and recorded  
25 on the recording medium, and

wherein a second flag has been recorded in the encode unit, the second flag representing whether

or not the current angle can be switched at the beginning of the encode unit.

14. The recording medium as set forth in claim 13,  
wherein the second flag is described in a  
5 predetermined region on the rear end side of each of  
the angles.

15. The recording medium as set forth in claim 14,  
wherein when a command that causes the  
reproduction position to be changed in the  
10 predetermined region is issued, the reproduction  
position is not changed.

16. The recording medium as set forth in claim 14,  
wherein when a command that causes the  
reproduction position to be changed in the  
15 predetermined region is issued, a position immediately  
preceding the predetermined region of a switched angle  
is traced and the switched angle is reproduced from the  
traced position.

17. The recording medium as set forth in claim 14,  
20 wherein the size of the predetermined region  
is based on the maximum access time from a first region  
to a second region and the difference between the read  
speed and the reproduction speed for the video stream.

18. A reproducing apparatus for reproducing  
25 content data recorded on a disc shaped recording medium,  
the reproducing apparatus comprising:

reading means for reading from the recording

medium a main stream mainly reproduced, a sub stream reproduced as a sub of the main stream along therewith, and a flag that represents whether or not the sub stream should be repeatedly reproduced not in synchronization with the main stream; and

reproducing means for controlling the reproduction of the sub stream in accordance with the flag.

19. The reproducing apparatus as set forth in claim 18,

wherein the reproducing means is configured to repeatedly reproduce the sub stream until the reproduction of the main stream is finished when the flag represents that the sub stream should be repeatedly reproduced.

20. The reproducing apparatus as set forth in claim 18,

wherein the sub stream is composed of only audio data.

21. A reproducing method for reproducing content data recorded on a disc shaped recording medium, the reproducing method comprising the steps of:

reading from the recording medium a main stream mainly reproduced, a sub stream reproduced as a sub of the main stream along therewith, and a flag that represents whether or not the sub stream should be repeatedly reproduced not in synchronization with the

main stream; and

controlling the reproduction of the sub  
stream in accordance with the flag.

22. A reproducing program that causes a computer  
5 device to execute a reproducing method for reproducing  
content data recorded on a disc shaped recording medium,  
the reproducing method comprising the steps of:

reading from the recording medium a main  
stream mainly reproduced, a sub stream reproduced as a  
10 sub of the main stream along therewith, and a flag that  
represents whether or not the sub stream should be  
repeatedly reproduced not in synchronization with the  
main stream; and

controlling the reproduction of the sub  
15 stream in accordance with the flag.

23. A recording medium on which a reproducing  
program that can be read by a computer device has been  
recorded, the reproducing program that causes the  
computer device to execute a reproducing method for  
20 reproducing content data recorded on a disc shaped  
recording medium, the reproducing method comprising the  
steps of:

reading from the recording medium a main  
stream mainly reproduced, a sub stream reproduced as a  
25 sub of the main stream along therewith, and a flag that  
represents whether or not the sub stream should be  
repeatedly reproduced not in synchronization with the



main stream; and

controlling the reproduction of the sub stream in accordance with the flag.

24. A disc shaped recording medium on which content data has been recorded,

wherein a main stream mainly reproduced, a sub stream reproduced as a sub of the main stream along therewith, and a flag have been recorded on the recording medium, the flag representing whether or not the sub stream should be repeatedly reproduced not in synchronization with the main stream, and

wherein the reproduction of the sub stream is controlled in accordance with the flag.

25. The recording medium as set forth in claim 24,

wherein when the flag represents that the sub stream should be repeatedly reproduced, the sub stream is repeatedly reproduced until the reproduction of the main stream is finished.

26. The recording medium as set forth in claim 24,

wherein the sub stream is composed of only audio data.

27. A reproducing apparatus for reproducing content data recoded on a disc shaped recording medium, the reproducing apparatus comprising:

reading means for reading from the recording medium video data, audio data reproduced in accordance with the video data, and a flag that represents whether

the video data and the audio data have been recorded as a multiplexed file or independent files; and

reproducing means for reproducing the video data and the audio data that are read by the reading means in accordance with the flag that is read by the reading means.

28. The reproducing apparatus as set forth in claim 27,

wherein the reproducing means is configured to reproduce the video data in synchronization with the audio data when the flag represents that the video data and the audio data have been recorded as a multiplexed file on the recording medium, and

wherein the reproducing means is configured to reproduce the video data not in synchronization with the audio data when the flag represents that the video data and the audio data have been recorded as independent files on the recording medium.

29. The reproducing apparatus as set forth in claim 27,

wherein the video data is composed of a plurality of still pictures, and

wherein the reproducing means is configured to switch the current still picture of the plurality of still pictures and reproduce the switched still picture.

30. The reproducing apparatus as set forth in claim 27,

wherein image data displayed in association with the video data has been further recorded on the recording medium,

5 wherein the video data and the image data have been divided into video data packets and image data packets and stored, the video data packets and image data packets each having a predetermined unit, and

10 wherein the video data packets and the image data packets are successively arranged and recorded on the recording medium.

31. A reproducing method for reproducing content data recoded on a disc shaped recording medium, the reproducing method comprising the steps of:

15 reading from the recording medium video data, audio data reproduced in accordance with the video data, and a flag that represents whether the video data and the audio data have been recorded as a multiplexed file or independent files; and

20 reproducing the video data and the audio data that are read at the reading step in accordance with the flag that is read at the reading step.

32. A reproducing program that causes a computer device to execute a reproducing method for reproducing content data recoded on a disc shaped recording medium, the reproducing method comprising the steps of:

reading from the recording medium video data,

audio data reproduced in accordance with the video data,  
and a flag that represents whether the video data and  
the audio data have been recorded as a multiplexed file  
or independent files; and

5                   reproducing the video data and the audio data  
that are read at the reading step in accordance with  
the flag that is read at the reading step.

33.           A recording medium on which a reproducing  
program that can be read by a computer device has been  
10   recorded, the reproducing program causing the computer  
device to execute a reproducing method for reproducing  
content data recoded on a disc shaped recording medium,  
the reproducing method comprising the steps of:

                  reading from the recording medium video data,  
15   audio data reproduced in accordance with the video data,  
and a flag that represents whether the video data and  
the audio data have been recorded as a multiplexed file  
or independent files; and

                  reproducing the video data and the audio data  
20   that are read at the reading step in accordance with  
the flag that is read at the reading step.

34.           A disc shaped recording medium on which  
content data has been recorded,

                  wherein video data, audio data reproduced in  
25   accordance with the video data, and a flag have been  
recorded on the recording medium, the flag representing  
whether the video data and the audio data have been

recorded as a multiplexed file or independent files,  
and

wherein the video data and the audio data  
that are read at the reading step are reproduced in  
5 accordance with the flag that is read at the reading  
step.

35. The recording medium as set forth in claim 34,  
wherein when the flag represents that the  
video data and the audio data have been recorded as a  
10 multiplexed file on the recording medium, the video  
data is reproduced in synchronization with the audio  
data, and

wherein when the flag represents that the  
video data and the audio data have been recorded as  
15 independent files on the recording medium, the video  
data is reproduced not in synchronization with the  
audio data.

36. The recording medium as set forth in claim 34,  
wherein the video data is composed of a  
20 plurality of still pictures, and

wherein the current still picture of the  
plurality of still pictures is switched and the  
switched still picture is reproduced.

37. The recording medium as set forth in claim 34,  
25 wherein image data displayed in association  
with the video data has been further recorded on the  
recording medium,

wherein the video data and the image data have been divided into video data packets and image data packets and stored, the video data packets and image data packets each having a predetermined unit,  
5 and

wherein the video data packets and the image data packets are successively arranged and recorded on the recording medium.

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